

**TITLE OF THE INVENTION****FRAMELESS CHAIR****BACKGROUND OF THE INVENTION**5      1.      **Field of the Invention**

[0001]      The present invention relates in general to frameless chairs, and more particularly to a frameless chair having improved body conformity, comfort and longevity, among other characteristics.

10     2.      **Background Art**

[0002]      Frameless chairs have long been known in the art. Conventionally, such frameless chairs comprise a substantially inelastic outer liner and a fill material (generally polystyrene). Such conventional frameless chairs have drawbacks relative to shapeability and durability as well as comfort.

[0003]      Certain improvements have been realized relative to frameless chairs which has cured some of the drawbacks. One area of improvement has been focused on the fill material. For example, conventional fill material has been replaced with a polyurethane fill material in U.S. Pat. No. 6,279,184 issued to George, U.S. Patent Application Publication US 2002/0023299 of George, U.S. Patent Application Publication US 2002/0078508 of George, U.S. Patent Application Publication US 2003/0066268 of George, the entire specification of which is hereby incorporated herein by reference. While such advances have improved the art, continued problems persist.

[0004]      Among other problems, the improved fill material has increased production times, production costs and has posed other production issues. Moreover, the improved fill material is generally substantially more expensive than conventional fill material.

[0005] Accordingly, it is an object of the invention to provide for an improved liner material which allows for the use of conventional fill material, including, but not limited to polystyrene.

5 [0006] It is another object of the invention to provide a frameless chair which exhibits

improved shapeability, durability and comfort.

[0007] This and other objects will become apparent in light of the specification and claims appended hereto.

## SUMMARY OF THE INVENTION

[0008] The invention comprises a frameless chair which includes an inner liner, an outer liner and a fill material. The inner liner includes an outer surface and an inner surface defining an enclosure, as well as an opening providing ingress into the enclosure. The outer liner includes an outer surface, an inner surface and an opening. The inner liner being positioned through the opening of the outer liner such that the outer surface of the inner liner is associated with the inner surface of the outer liner. The fill material is positioned within the enclosure of the inner liner. At least a portion of the inner liner and the outer liner comprises a material which is capable of elastic deformation.

[0009] In a preferred embodiment, the inner liner includes a closure member capable of substantially sealing the opening of the inner liner. In one such embodiment, the closure member comprises a zipper.

[0010] In another preferred embodiment, the outer liner includes an opening and a closure member capable of substantially sealing the opening of the outer liner. In one such embodiment, the closure member comprises a zipper.

[0011] In yet another preferred embodiment, substantially the entirety of the inner liner comprises a material which is capable of elastic deformation. Preferably, substantially the entirety of the outer liner comprises a material which is capable of elastic deformation.

[0012] In yet another preferred embodiment, the material which is capable of elastic deformation comprises a material which is capable of elastic deformation in a plurality of directions.

[0013] In one such embodiment, the material which is capable of elastic deformation

comprises a spandex material. Preferably, the the material is capable of stretching from a first unstretched configuration to a second stretched configuration which is approximately 5% to 120% greater than the unstretched configuration. Additionally, the material comprises a weight of between approximately 4 ounces per square yard and 20 ounces per square yard.

5 [0014] In another preferred embodiment, the inner surface of the outer liner substantially abuts the outer surface of the inner liner substantially continuously about the respective surfaces thereof.

10 [0015] In yet another preferred embodiment, the fill material comprises a plurality of small members. In one such embodiment, the small members comprise a polystyrene material. Preferably, to enhance comfort, the small members have a largest dimension between about 1mm and 25mm.

[0016] In yet another preferred embodiment, each of the outer liner and the inner liner comprise a substantially spherical configuration. Preferably, the largest dimension thereof is between 2 and 5 feet.

15 [0017] Preferably, each of the inner liner and the outer liner comprise a plurality of panels attached to each other.

[0018] In another preferred embodiment, the frameless chair further comprises at least one intermediate liner positioned between the inner liner and the outer liner. In one such preferred embodiment, the at least one intermediate liner comprises one intermediate liner.

#### BRIEF DESCRIPTION OF THE DRAWINGS

- [0019] The invention will now be described with reference to the drawings wherein:
- [0020] Figure 1 of the drawings comprises a perspective view of a frameless chair of the present invention;
- 5 [0021] Figure 2 of the drawings comprises a cross-sectional view of a frameless chair of the present invention;
- [0022] Figure 3 of the drawings comprises a cross-sectional view of a frameless chair of the present invention; and
- [0023] Figure 4 of the drawings comprises a top plan view of a portion of the outer liner.

## DETAILED DESCRIPTION OF THE INVENTION

[0024] While this invention is susceptible of embodiment in many different forms, there is shown in the drawings several specific embodiments with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiments illustrated.

[0025] It will be understood that like or analogous elements and/or components, referred to herein, are identified throughout the drawings by like reference characters. In addition, it will be understood that the drawings are merely representations of the present invention, and some of the components may have been distorted from actual scale for purposes of pictorial clarity.

[0026] Referring now to the Figures, and in particular to Figure 1, the frameless chair of the present invention is shown at 10. It will be understood that the frameless chair is sized to comfortably fit and hold one or more individuals in comfort. Generally, in any direction, the frameless chair may have a dimension which is between approximately 2 feet and 5 feet, however other dimensions sufficient to accommodate individuals (or pets and the like) are contemplated. Referring now to Figure 2, frameless chair 10 comprises outer liner 12, inner liner 14 and fill material 16.

[0027] Outer liner 12 is shown in Figure 2 as comprising outer surface 20, inner surface 22 and opening 24 (Figure 1). Outer liner 12 is formed from one or more pieces of material which are stitched, sealed, adhered or otherwise attached to define enclosure 26. Ingress to and egress from enclosure 26 is provided by opening 24. The outer liner generally comprises a substantially spherical enclosure, however, other enclosure shapes, such as cubic,

multi-sided, arbitrary, etc., are likewise contemplated. Indeed, the invention is not limited to any particular configuration of the circular enclosure. Opening 24 includes closure member 28 which may comprise any number of different structures to seal enclosure 26. Among other structures, closure member 28 (Figure 1) may comprise a zipper, hook and loop fastener, mating seal members, among others.

5

[0028] Inner liner 14 is shown in Figure 2 as comprising outer surface 30, inner surface 32 and opening 34. Inner liner 14 is formed from one or more pieces of material which are stitched, sealed, adhered or otherwise attached to define enclosure 36. Ingress to and egress from enclosure 36 is provided by opening 34. The inner liner comprises a shape which may be consistent with the general shape of outer liner 12 such that the inner liner 14, when inserted into enclosure 26 of outer liner 12 and properly positioned, is associated with the outer liner. Indeed, it is preferred that outer surface 30 of inner liner 14 substantially abuts inner surface 22 of outer liner 12. In other embodiments, the inner liner and the outer liner may be joined at discrete location (i.e., seams). Of course, the inner liner and the outer liner may be of different configurations in other embodiments, and may not be coextensive, as long as the two liners can adequately cooperate. As with the outer liner, closure member 38 is positioned so as to seal opening 34. While various structures are contemplated, closure member 38 may comprise a zipper, hook and loop fastener, mating seal members, among others. In an embodiment wherein the inner and outer liners are joined, a single closure member may be used to seal the overlying openings 24, 34.

10

[0029] As is shown in Figure 3, additional intermediate liners, such as intermediate liner 47, may be positioned between the inner liner and the outer liner, such that a three-ply

15

20

frameless chair may be defined. Indeed, for certain applications, it may be desirable to position another liner wholly about the inner liner, or partially about the outer liner, such that the inner liner and the outer liner are separated from each other. For example, the inclusion of one or more intermediate liners may enhance the rigidity and conformity of the overall frameless chair. Moreover, desirable liner materials which are incompatible with the fill material and/or incompatible as an outer surface may be included as an intermediate layer.

5 One such material may comprise a water repellent liner material. Of course, such an intermediate liner or liners may comprise materials similar to or different from the materials which form the inner and outer liners. Additionally, in certain embodiments, an outer liner may be omitted and the frameless chair may comprise only a single inner liner.

10

[0030] The material from which the inner liner and the outer liner are formed preferably comprises a material which is capable of elastic deformation (i.e., stretching) in multiple directions. One such material is shown in Figure 4 as comprising a spandex material which is capable of being stretched in two directions. Preferably, the elastic material is capable of stretching from a first unstretched configuration to a second stretched configuration which is approximately 5% to 120% greater than the unstretched configuration. Of course, materials having different degrees of stretching are contemplated. Such a preferred material may have a weight of between approximately 4 ounces per square yard and 20 ounces per square yard. It is preferred that each of the inner liner and the outer liner comprise the same material, however, the invention is certainly not limited thereto. Moreover, it is contemplated that the inner liner and the outer liner may comprise several different materials wherein only a portion of the liner may be capable of elastic deformation. The cooperation of

15

20

the inner liner and the outer liner, each of which comprises a stretchable material, facilitates the enhanced comfort of the frameless chair.

[0031] Fill material 16 is shown in Figure 2 as comprising a plurality of small members 50 which are placed within enclosure 36. Generally, small members 50 comprise polystyrene having a generally spherical, square and/or arbitrary geometry. Such small members generally have dimensions ranging from approximately about 1 mm to approximately about 25 mm. Of course, the small members are not limited to this particular dimension. In addition, other materials are likewise suitable for use as a fill material, including but not limited to, polyurethane foam members, textile fibers, wool, synthetic wool, among others.

[0032] To manufacture the frameless chair, the inner liner is provided. Next, fill material 16 is introduced into enclosure 36 until filled to the desired size and shape. It is contemplated that the fill material is placed into enclosure 36 until the inner liner is substantially filled to capacity, but preferably before any stretching of the liner material has occurred. Of course, the precise amount of fill that is used, and the stretched/unstretched configuration of the liner material after filling is not limited to the foregoing example.

[0033] Once the inner liner is filled, the opening 34 is closed by way of seal closure 38, to effectively preclude the egress of fill material from within enclosure 36. Next, the outer liner is provided, and the inner liner, with all of its fill material is inserted through opening 24 into enclosure 26. Lastly, seal closure 28 is employed to seal opening 24. Alternatively, the two liners can be assembled prior to filling of the inner liner. While such an assembly is acceptable, a greater risk of introducing fill material between the two liners exists.

[0034] In operation, the frameless chair typically rests on a surface, such as the floor of a dwelling. In such a condition, the fill material in cooperation with the flexibility and stretchability of the liners maintain the frameless chair in a first unstressed orientation. Once a user sits on the frameless chair, the shape of the chair is altered by the weight of the user.

5 Advantageously, due to the ability of the inner liner and the outer liner material to stretch, the frameless chair is capable of conforming to a user while maintaining a desirable and comfortable overall integrity, shape and configuration. Thus, the seating comfort of the user is greatly enhanced.

10 [0035] The foregoing description merely explains and illustrates the invention and the invention is not limited thereto except insofar as the appended claims are so limited, as those skilled in the art who have the disclosure before them will be able to make modifications without departing the scope of the invention.

15